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10CFR50.73

June 11, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Unit 1
Facility Operating License No. NPF-39
NRC Docket No. 50-352

Subject: LER 1-03-003, Unit 1 Scram due to Closure of the Deep Bed Condensate
Demineralizer (DBCD) Inlet Header Block Valve

This Licensee Event Report (LER) addresses an automatic actuation of the reactor protection system due to a valid reactor low level condition. A closure of the DBCD inlet header block valve caused the reactor feed pumps to trip on low suction pressure.

Report Number: 1-03-003
Revision: 00
Event Date: April 23, 2003
Discovered Date: April 23, 2003
Report Date: June 11, 2003

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,



Robert C. Braun
Vice President (acting) – Limerick

cc: H. J. Miller, Administrator Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

IE22

SUMMARY OF EXELON NUCLEAR COMMITMENTS
LS-AA-117-1003 Rev.1

The following table identifies commitments made in this document by Exelon Nuclear. (Any other actions discussed in the submittal represent intended or planned actions by Exelon Nuclear. They are described to the NRC for the NRC's information and are not regulatory commitments.)

Commitment #1

Operating procedures were revised to maintain the DBCD inlet header block valve and outlet header block valve open and de-energized during operation at power. The DBCD flow control (outlet) valves have been maintained open and de-energized during operation at power since April 1999.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Limerick Generating Station, Unit 1

DOCKET NUMBER (2)

05000 352

PAGE (3)

1 OF 4

TITLE (4)

Automatic Scram on Low Reactor Level Due to Condensate Deep Bed Demineralizer Valve Closure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	23	2003	2003	003	00	06	11	2003	FACILITY NAME	DOCKET NUMBER
										05000
										05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check all that apply) (11)							
POWER LEVEL (10)		100	20.2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)	50.73(a)(2)(x)
			20.2203(a)(1)			50.36(c)(1)(i)(A)		x	50.73(a)(2)(iv)(A)	73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)	73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)	OTHER
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)			50.73(a)(2)(i)(A)			50.73(a)(2)(v)(D)	
			20.2203(a)(2)(v)			50.73(a)(2)(i)(B)			50.73(a)(2)(vii)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)	
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(vii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Marino C. Kaminski, Manager - Experience Assessment

TELEPHONE NUMBER (Include Area Code)

(610) 718-3400

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE).

X

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced, typewritten lines) (16)

A valid reactor low level condition resulted in an automatic actuation of the reactor protection system. A closure of the deep bed condensate demineralizer inlet header block valve caused the reactor feed pumps to trip on low suction pressure resulting in the reactor low level condition. In addition, the low level condition resulted in actuation of the high pressure injection system, reactor core isolation cooling system and primary containment isolation valves. Operating procedures were revised to maintain the deep bed condensate demineralizer inlet header block valve open and de-energized during operation at power.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000352	2003	— 003	— 00	2 OF 4

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Unit Conditions Prior to the Event

Unit 1 was in Operational Condition (OPCON) 1 (Power Operation) at approximately 100% power. There were no structures, systems or components out of service that contributed to this event.

Description of the Event

On April 23, 2003, at 02:07 hours, the 1C reactor feed pump (RFP) (EHS:P) tripped on low suction pressure due to closure of the deep bed condensate demineralizer (DBCD) (EHS:SF) inlet header block valve (HV-016-191) (EHS:20). The 1B RFP tripped on low suction pressure approximately six seconds later. An automatic actuation of the reactor protection system (RPS) (EHS:JC) on reactor low water level occurred approximately two seconds after the trip of the 1B reactor feed pump. The automatic actuation of RPS preceded the manual scram initiated by the operators by approximately one second. All controls rods inserted as designed. The 1A RFP tripped on low suction pressure approximately 20 seconds after the scram.

Reactor pressure remained below 1170 psig during the transient and was controlled by the main turbine bypass valves (BPV). The lowest main steam relief valve (MSRV) setpoint of 1170 psig was not exceeded; therefore, no actuation of MSRVs occurred.

Reactor narrow range level dropped to approximately -62 inches and subsequently recovered due to automatic actuations of the high pressure injection (HPCI) system (EHS:BJ) and reactor core isolation cooling (RCIC) system (EHS:BN) at -38 inches. Level peaked at +45 inches, which is less than the +54 inch trip setpoint for the RFPs and the main turbine. The Group 2 residual heat removal (RHR) isolation occurred as designed at +12.5 inches.

In addition to the HPCI and RCIC actuations all expected actuations occurred at -38 inches. These actuations included redundant reactivity control system (RRCS) alternate control rod insertion (ARI) function, RRCS anticipated transient without scram - recirculation pump trip (ATWS-RPT) function, reactor water cleanup isolation, and reactor enclosure ventilation isolation. Primary containment isolation valves in groups IB, III, VIA, VIB, VIC, VIIB, and VIIIB received isolation signals and isolated as designed. Bypass barrier block and vent valves also actuated as designed. In addition, the 1A and 1B reactor recirculation pump M-G sets tripped as designed during the fast-transfer of the 13kV unit auxiliary buses.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000352	2003	— 003	— 00	3 OF 4

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

This event resulted in an emergency core cooling system discharge into the reactor coolant system as a result of a valid signal, an actuation of the RPS system when the reactor was critical, and a valid actuation of the RPS system. The 4-hour ENS notification required by 10CFR50.72(b)(2)(iv)(A), 4-hour ENS notification required by 10CFR50.72(b)(2)(iv)(B) and the 8-hour ENS notification required by 10CFR50.72(b)(3)(iv)(A) were completed on April 23, 2003 at 05:29 EDT hours (Event# 39784).

This event involved an automatic actuation of the reactor protection system, containment isolation system, emergency core cooling system, and reactor core isolation cooling system. Therefore, this LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

Special Reports will be submitted under separate cover as required by Technical Specifications (TS) 3.5.1.f and 3.7.3.b for the HPCI and RCIC injections.

Analysis of the Event

There were no actual safety consequences associated with this event. The potential safety consequences of this event were minimal. The reduction in condensate capacity to the RFPs resulted in a reactor scram as designed. The HPCI and RCIC systems automatically actuated and successfully recovered reactor level to normal. Reactor critical parameters were monitored and controlled by Operations.

The radwaste operator and a trainee were present in the radwaste control room at the time of the event. Neither operator recalled any specific contact with the DBCD control console keyboard during the shift. However, both operators had reentered the radwaste control room just prior to the event and one operator was sitting approximately one foot away from the console at the time of the event.

An investigation determined that the programmable logic controller (PLC) located in the DBCD control console had transmitted a signal for the DBCD inlet header block valve to close. It was not possible to definitively determine if this signal was initiated from the control console keyboard. Testing was performed on the control console components but was unable to produce an unexpected signal to close the inlet header block valve.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000352	2003	— 003	— 00	4 OF 4

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

The closing of the motor-operated DBCD inlet header block valve (HV-016-191) caused a loss of suction to the RFPs. Therefore, the RFPs tripped as designed. The RFP low suction pressure trip setpoint is nominal 233 psig. The pumps are designed to trip in sequence on low suction pressure. The 1C RFP trips in 5 seconds, 1B RFP in 10 seconds, and 1A RFP in 15 seconds. The 1C RFP and 1B RFP tripped as designed resulting in a temporary increase in the 1A RFP suction pressure as the DBCD inlet header block valve was closing. The 1A RFP tripped as designed as the DBCD inlet header block valve continued to close. The DBCD bypass valve automatically opened due to a high differential pressure condition as the DBCD inlet header block valve was closing permitting reset of the 1A RFP.

Cause of the Event

The low level condition was caused by the closure of the DBCD inlet header block valve. The valve most likely was closed by inadvertent contact with the DBCD control console keyboard located in the radwaste control room.

Corrective Action Completed

Operating procedures were revised to maintain the DBCD inlet header block valve and outlet header block valve open and de-energized during operation at power. The DBCD flow control (outlet) valves have been maintained open and de-energized during operation at power since April 1999.

Previous Similar Occurrences

An inadvertent closure of the DBCD flow control (outlet) valves resulted in a Unit 1 automatic actuation of the RPS system on April 20, 1999. A loss of power to the Unit 1 DBCD inlet valve position indication circuits caused the DBCD flow control (outlet) valves to close. This event was reported in LER 1-99-003.

Component data:

System: SF (Condensate Demineralizer System)
Component: 20 (Valve, Electrically Operated)
Manufacturer: V085 (Velan Valve Corp)
Model: B30-1064C-02AA(MO)
Reportable to EPIX: Yes